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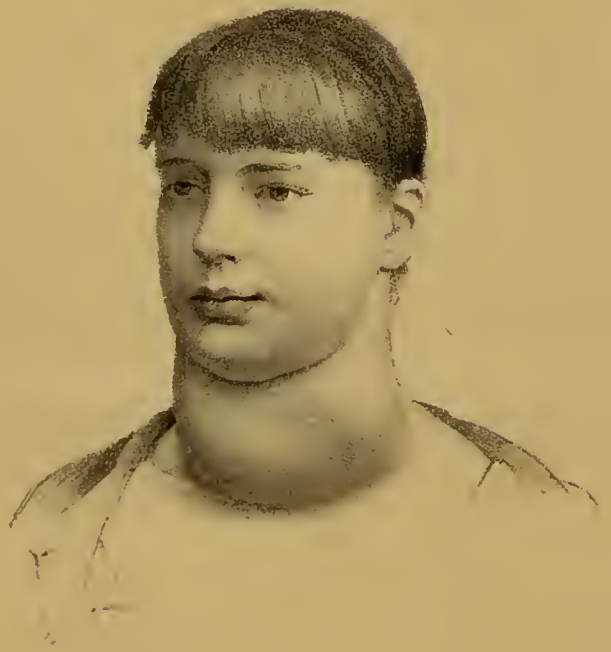

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Sir William Stokes on Operations on the Thyroid Gland

OPERATIONS ON THE THYROID GLAND.

BY

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OPERATIONS ON THE THYROID GLAND.[a]

Even a comparatively limited experience in the operation of thyroidectomy, coupled with an examination of the statistical records of the operation, more particularly those published in the Special Report of the Clinical Society of London on the subject of Myxœdema, compels us to recognise, not only the great immediate difficulties and dangers of the operation in the great majority of such cases, but also—notwithstanding what has been said to the contrary by Professors Billroth, Wölfler, Credé, Baumgärtner, and others—the liability to the supervention of operative myxœdema, or cachexia strumipriva, when the thyroid is removed in its entirety.

There seems, in truth, to be as wide a difference of opinion in reference to the liability to the occurrence of this mysterious and, we must admit, unexplained condition, as there have been hypotheses to account for it. Of these latter the chief are, as mentioned by Mr. F. Semon (in his Report on the Results of Total and Partial Extirpation of the Goîtrous Thyroid Gland in Man[b]), deficient development or atrophy of the trachea following the operation (Kocher); injury to the recurrent laryngeal nerves caused during the progress of the operation, or due to inflammation, adhesions, and cicatrisation following it (Baumgärtner); injury to the sympathetic nerve (Baumgärtner); mode of operation; and, lastly, endemic influences.

None of these can be regarded as at all satisfactory, and, as a matter of fact, have been completely disproved. We must, therefore, regretfully confess that as yet no explanation of the occurrence of operative myxœdema has been given that can be accepted.

The wide difference of opinion as to the liability of the condition after complete removal of the gland is notorious; but, without

[a] Read before the Section of Surgery in the Royal Academy of Medicine in Ireland, on Friday, May 15, 1891.

[b] Clinical Society's Transactions. Supplement to Vol. XXI. P. 169.

entering into any further statistical details with a view to either verify or disprove the statements made with reference to this point, I may mention that Prof. Bardeleben has not observed it in any of the 15 cases he has had, and that Prof. Billroth noticed it in only 2 out of 146 cases that occurred in his clinique. "It is well known," as Dr. F. Semon observes, "that Prof. Billroth's negative experience, based upon so large a number of operations, has always been pointed to by those surgeons who are disinclined to believe in a connection between the loss of the functions of the gland and the cachexia as a valid proof against this connection. But now it is stated by Prof. Wölfler that out of 22 patients of Prof. Billroth's, who are still living, and whose cases could be utilised for the present inquiry, 1 suffers from tetany, 1 from tuberculosis, 2 from conditions which resemble slight symptoms of cachexia strumipriva, while of the other 18 who have remained well, at least in 7, if not in 9, 'recurrence' of the goître is said to have taken place. Yet all these cases are distinctly reported as instances of 'total' extirpation of the thyroid gland.[a] Such statistics we must, I fear, accept with much reserve."

On the other hand, we have the statements of Profs. Kocher and Reverdin, the former of whom in 32 cases of total ablation and the latter in 18, observed myxœdema to occur in a very large proportion.

Under these circumstances every effort should and, doubtless, will be made to determine whether any other efficacious operative treatment, less hazardous as regards both immediate and remote unfavourable consequences, should not preferably be employed. I am not sanguine enough to hope that this important question will ever be settled here, no surgeon in this country having a surgical material that is at all adequate for the purpose; but any clinical facts bearing on this question cannot be considered as devoid of interest and importance. Accordingly, I desire to draw attention, and will do so with all brevity, to some cases under my care in which enlargement of the thyroid gland was the subject of operation. The cases are seven in number, of which three were examples of unilateral and four of bilateral enlargement. In two cases of the former group the results of the operation were all that could be desired. In many respects, however, they differed materially from one another. One occurred in a female, aged

[a] Clin. Soc. Trans. Vol. XXI. P. 151.

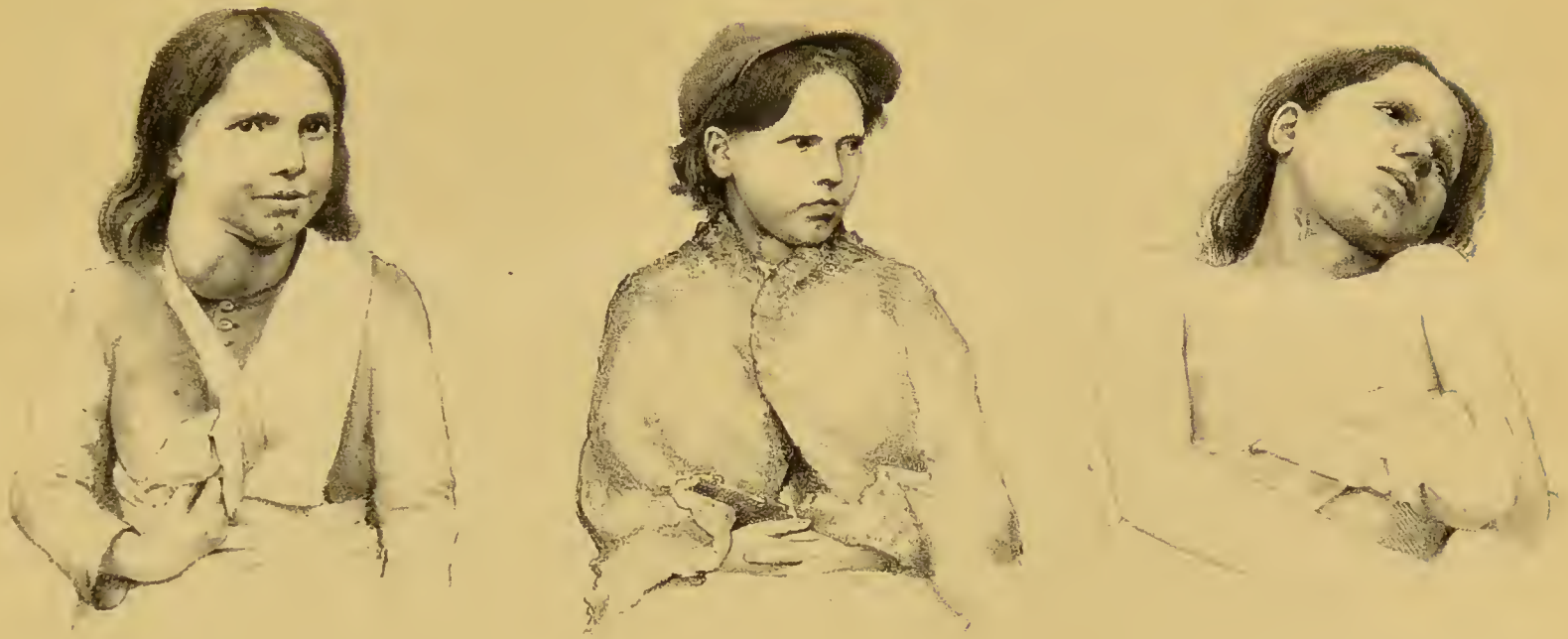
thirty-two, who was operated on in the Richmond Hospital in 1880. The disease was an example of a cystic thyroid, and a large amount of calcareous deposit was contained in the tumour. The tumour was strongly encapsuled, and its removal was accomplished with comparative facility. The subsequent progress of the case, as far as I could trace it, was satisfactory. The second one was that of a girl, aged eleven, who was recommended to me by Dr. M'Dowel, of Sligo, in 1886. The case differed in every respect from the former. The right lobe was the one chiefly engaged; its base was broad and ill-defined at each side, and crossing it at its most prominent part were large veins—storm signals of the dangers and difficulties I felt sure I should have to encounter in my attempt to remove the tumour. These gloomy anticipations were fully realised, for the hæmorrhage was as excessive as in any case of the kind I have ever had or witnessed, and were it not for the timely assistance I had from my colleagues, Mr. Thomson and Mr. Thornley Stoker, the result might have been different. I commenced by making an incision, about three inches in length, over the tumour. One of the large veins crossing it was wounded while dividing the strong fascia covering it. Ultimately the hæmorrhage from this vessel was controlled by two clip forceps. The fascia was then detached at each side of the tumour chiefly by the finger, and an artery at the upper part of the tumour had to be ligatured, and another secured by forceps. I then freed the tumour from its attachments on the inside, and ultimately came down on the isthmus, which was, with much difficulty, isolated. At this stage of the operation the hæmorrhage was very alarming, for it is no exaggeration to say that everything that was touched appeared to bleed. I succeeded, however, in passing an aneurysm needle around, with a double silk ligature round the isthmus, and divided it between them. The child then almost ceased to breathe; there was laryngeal stridor and the teeth were clenched, and she was pulseless. I was about to open the trachea when the spasm subsided immediately after a hypodermic injection of ether had been administered. I was then enabled to continue the operation; but before completing it and removing the tumour had to encounter hæmorrhage, which at times appeared quite uncontrollable. The wound was then dressed with boric acid and iodoform, and closed with numerous points of suture. The patient ultimately made an excellent recovery, nor has there since she left hospital been any evidence

of the left lobe becoming engaged. The appearance of this patient previously and subsequent to the operation is faithfully represented in the accompanying lithographs, which are taken from photographs (Plate I.).

The third case occurred in a boy aged ten, the brother of the last patient, and operated on the year after the preceding one was dealt with. The case presented many striking features of similarity, as regards the size and consistence of the tumour, to his sister's. The result, however, was very different. It was, in fact, one of those painful and tragical events in surgery which everyone who considers himself competent to undertake operations of such magnitude must be prepared occasionally to encounter. After the removal of the tumour, which was attended with the usual difficulties and dangers consequent on the violent and uncontrollable hæmorrhage, the patient, notwithstanding all our efforts to save him, sank from exhaustion and died.

The details of the fourth case, which occurred in a female, aged eighteen, operated on in the Richmond Hospital, in which both lobes of the thyroid were engaged and removed in two separate operations, I have already published in the *British Medical Journal* in 1886, and therefore will not do more than state that three weeks after the removal of the second lobe she had a convulsive seizure characterised by clenching of the hands, dilatation of the pupils, slight stertorous breathing, eyes wide open and staring, frothy discharge from the mouth, and marked acceleration of the pulse. These symptoms lasted about a minute, and she then fell asleep. Shortly after this, puffy swellings appeared in the eyelids, on the back of the wrists, and over the metatarsus of both feet. There was much mental torpidity, indicated by the length of time she took before answering a question, and great slowness of utterance. She complained, too, of occasional pains in the arms and legs. As the case progressed all these symptoms became intensified, the convulsive seizures recurred frequently and with an increasing intensity, the mental torpidity also became greater, as did also the pains in her extremities. She also got the vacuous semi-idiotic expression of face, so often observed in cases of myxœdema.

Ultimately the breathing became affected, apparently from the supervention of pulmonary infiltration, and the patient gradually sank from exhaustion three weeks after the removal of the second lobe of the gland. This case, which appears to be, from the acute



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course it ran, a unique one, is, I think, of special interest as clearly showing the relation between complete removal of the thyroid and the development of serious cerebral symptoms and myxœdema. Plate II. (frontispiece) is a representation of the patient before and after the first operation.

The fifth case was that of a female, aged twenty-five, who had a triple enlargement of the thyroid—two lateral lobes and a central one occupying the isthmus. She was operated on in the Richmond Hospital in 1884. The enlargement on the isthmus was the most prominent of the three, and was the only one I dealt with. It was about the size of a small Tangerine orange, and its removal was comparatively easy. After fully exposing the tumour by a vertical incision I passed strong silk ligatures round the portions of the gland connecting it with the two lateral lobes, and then dissected away the tumour, with, however, considerable difficulty. The interesting point connected with this case was the rapid diminution in size after the operation of the two remaining enlargements, nor was there any evidence of a recurrence of the enlargements when I saw the patient more than a year subsequently to the operation. After that I lost sight of her.

The sixth case was that of a youth, aged fifteen, on whom I operated in 1883. The enlargement was in this case not so great as in the others, but still large enough to give rise to marked deformity, and it was steadily increasing. I adopted in this case the treatment of ligature and removal of portion of the isthmus, as originally, I believe, recommended by Sir D. Gibb, and to which such an impulse has been given by Mr. Sydney Jones, and the result was very interesting—indeed surprising. The lateral enlargement shrank with a rapidity that was remarkable. Five months after the patient left hospital I saw him again, and was glad to observe that there was no evidence of any return of the tumour.

The seventh case was that of a female, aged twenty-four, who was the subject of operation in the early part of last year in the Meath Hospital. The enlargement was well marked on both sides, but with very ill-defined limits, and appeared to be also to a certain extent substernal. These two circumstances were contra-indications to any extensive ablation of the tumour until, at all events, other and less hazardous methods of operative treatment had been tried. The patient was very urgent that something should be done in this direction, as the deformity was very great, and

at times dyspnœa well marked. The case appeared to me to be peculiarly suited to the operation of ligature and removal of the isthmus, which I accordingly recommended. The operation, in which I was ably assisted by my colleagues, Mr. Smyly and Mr. Hepburn, was performed in a manner very similar to that mentioned in connection with the last case, but the result was somewhat different. Instead of the operation being followed by a shrinkage of both enlarged lateral lobes, the diminution which took place subsequently was confined to one side only—namely, the left—and here, when the patient left the hospital, was a deep hollow sulcus where, previously to the operation, existed the enlarged left lateral lobe. It is not easy to give an explanation of this, but the unilateral shrinkage, as a result of ligature and excision of the isthmus, is a deeply interesting, and I believe, a hitherto unnoticed clinical fact.

As regards details of the operation of excision, it is very doubtful to me as to whether, in the majority of cases, much value is to be attached to rules that have been laid down as to particular directions in which incisions are to be made, and the situation where the inferior thyroid artery is to be ligated, with a view of minimising the chance of involving the recurrent laryngeal nerve, although, no doubt, the desirability of ligaturing it as far as possible from the point where it enters the gland should ever be borne in mind. In certain cases, doubtless, when, owing to the tumour being well encapsuled, with distinct limitation, and not substernal, particular vessels can be isolated, easily recognised, and secured. But in the cases I have operated on, more particularly such as those illustrated in this paper, as well as in the cases recorded by Mr. Thornley Stoker and the late Dr. Corley—in which the hæmorrhage was as profuse as it was continuous, the vessels of great calibre, with thinned walls, and bleeding fiercely without the slightest provocation—the inutility of any fixed and definite rules becomes apparent, and the surgeon can rely only on his own judgment, experience, skill, and patience.

The operation of ligature and excision of the isthmus consisted in making a vertical incision, about three inches in length, in the middle line, care being taken to avoid as much as possible wounding the transverse branches of the anterior jugular veins until they had first been secured by ligatures. On the isthmus being exposed it should be detached from the trachea, and in doing so Fergusson's blunt flat steel director will be found most useful. An aneurysm

needle, carrying a double loop of carbolised silk or catgut, can then be used to secure the isthmus at its junction with the gland at either side; or, if apprehensions exist as to the liability of the ligature slipping off, the isthmus can be transfixed by the needle. On being firmly secured at either side it can then be either divided or excised.

In connection with this operation, I have recently had a communication from Mr. Sydney Jones, which contains several points of interest and practical importance. He observes:—"Where there has been distinct lateral pressure, either by a well-marked isthmus drawing together the lateral lobes, or where there is no evidence of isthmus, the enlarged lateral lobes pressing on each side of the trachea, I have never been satisfied with a simple division of it. Passing my finger beneath it—between it and the trachea—I have transfixed the right and left ends (at junction with the thyroid) with an aneurysm needle carrying a double thread, ligaturing as with an ovarian pedicle, and excising the bit between the ligatures. My object in all cases has been to make a wide groove between the two lateral lobes. Through this wide groove the threads may be passed to the lower part of the wound over the upper end of the sternum, and thus effectual drainage secured. I have found the trachea laterally compressed. The result of the operation has been diminution of the thyroid and relief of the symptoms. The risk of the operation does not seem much."

Another operation, having for its object the starvation and shrinkage of the tumour by ligature of the thyroid arteries, has been lately advocated by Prof. Wölfler, of Vienna. The results of the operation so far have not been very satisfactory, and further experience would be required before definitely deciding on its merits.

When comparatively recently I brought the subject of operations on the thyroid before the Biological Club, I was asked by one of the members, after the communication was concluded, if I had ever operated on a case of exophthalmic goître. I replied that I had not, nor was I aware that it had ever been done. Since that, however, I have had an opportunity of seeing in the *Deutsche medicinische Wochenschrift*, the records of two cases operated on by Dr. Lemke, of Hamburg, and, it is stated, with good results. One of the cases was that of a boy, aged seventeen, who for two years had suffered from palpitation of the heart and shortness of breath. He

then developed exophthalmos and goître, and suffered ultimately from such dyspnœa that laryngotomy was performed, and Kœnig's long cannula inserted into the trachea. Subsequently the left lobe of the thyroid was removed; the result was most successful. Seven months after, the enlarged right lobe had disappeared, as well as the exophthalmos and the cardiac disturbance. The second case was that of a male, aged forty-seven, in whom the symptoms and signs of Graves' disease were well marked. In this case operative interference was attended with equally good results. The right lobe was removed—an operation attended with great hæmorrhage—but the recovery was rapid, and in every way satisfactory.

Having regard to these cases, and the remarkable results obtained from ligature and excision of the isthmus, it is a matter worthy of consideration whether this latter and less hazardous operation might not be undertaken with a good prospect of success in exophthalmic goître.

When we consider the exceptional difficulties, dangers, and serious sequelæ that at times attend immediately or occur remotely after thyroidectomy, whether it be complete or partial, such as hæmorrhage, tracheal collapse, injury to the recurrent laryngeal nerve, tremors, convulsions, sudden dyspnœa, shock, septic infiltration, nerve degeneration at a situation remote from the field of operation, myxœdema and cretinism, it is remarkable that a method of procedure—namely, ligature and excision of the isthmus—that, so far as our experience goes, does not appear to be attended with the same risk, has not merited a greater attention at the hands of surgeons than it has hitherto done. I do not know of any case except those of Mr. Holthouse, who has narrated the particulars of two cases, Mr. Sydney Jones, who has had four alluded to by Sir Willliam MacCormac in his able surgical address in Belfast in 1884, and my three cases. These are very few, but still the results are distinctly encouraging. Mr. Jacobson, in his excellent work on Operative Surgery, says:—"I would most strongly urge a further trial of this operation in cases of general enlargement of the gland, especially when the isthmus itself is enlarged." (P. 458).

Should the experience of surgeons in the future coincide with that which has been already acquired, limited though it be, a very great advance will be acknowledged to have taken place in the treatment of one of the most serious conditions that the operating surgeon may be called upon to deal with.